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| 10/580,535 | 05/25/2006 | Daisuke Kumaki | 0756-7707 | 5741 |
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| ERIC ROBINSON | | | LL MEIYA | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/580,535

Applicant(s)

KUMAKI ET AL.

Examiner

MEIYA LI

Art Unit

2811

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 November 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 27-36 and 47-56 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 27-36 and 47-56 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/06)
Paper No(s)/Mail Date 11/24/09
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 13, 2009 has been entered.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on November 24, 2009 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 27-35 and 47-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Forrest et al. (5,757,026) in view of Fujita et al. (6,566,807).

As for claim 27, Forrest et al. show in Fig. 2A and related text a light-emitting element 29 comprising:

an anode 35/40 and a cathode 26/43 (Col. 5, lines 29 and 32); and
a first layer 20E containing a light-emitting material;

a second layer 21H (layer below 21E) containing a first organic compound, the second layer being on the first layer; and

a third layer 22T (layer above 22E) containing a second organic compound, the third layer being on the second layer,

wherein the first layer, the second layer, and the third layer are interposed between the anode and the cathode, and sequentially formed in such a way that the third layer is formed to be in contact with the cathode.

Forrest et al. do not disclose that the second layer contains a first material having an electron donor property for the first organic compound, and the third layer contains a second material having an electron acceptor property for the second organic compound.

Fujita et al. teach the second layer contains a first material 27 having an electron donor property for the first organic compound, and the third layer contains a second material 23 having an electron acceptor property for the second organic compound (Col. 7, lines 47-59; Col. 10, lines 65-67).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to include a first material having an electron donor property for the first organic compound, and a second material having an electron acceptor property for the second organic compound, as taught by Fujita et al., in Forrest et al.'s device, in order to improve the luminous properties and the heat resistance of the device simultaneously.

The combined device shows a second layer containing a first organic compound and a first material having an electron donor property for the first organic compound, the

second layer being on the first layer; and a third layer containing a second organic compound, the third layer being on the second layer and a second material having an electron acceptor donor property for the second organic compound.

As for claim 28, the combined device shows the first organic compound is an organic compound having an electron transporting property (Forrest: Col. 4, lines 22-23).

As for claim 29, the combined device shows the first organic compound is a metal complex having a ligand with a π -conjugated skeleton.

As for claim 30, the combined device shows the first material having the electron donor property is an alkali metal, an alkaline earth metal, or a rare earth metal (Fujita: Col. 10, lines 65-67).

As for claim 31, the combined device shows the second organic compound is an organic compound having a hole transporting property (Forrest: Col. 10, line 37).

As for claim 32, the combined device shows the second organic compound is an organic compound having an aromatic amine skeleton.

As for claim 34, the combined device shows the cathode being in contact with the third layer is made from a conductive material formed by sputtering (Forrest: Col. 5, line 58; Col. 6, lines 55-59).

Regarding the process limitations ("forming by sputtering"), these would not carry patentable weight in this claim drawn to a structure, because distinct structure is not necessarily produced.

Note that a "product by process" claim is directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wertheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); and *In re Marosi et al.*, 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that the applicant has the burden of proof in such cases, as the above case law makes clear.

As for claim 35, the combined device shows the conductive material is transparent to visible light (Forrest: Col. 4, lines 40-43; Col. 5, line 58; Col. 6, lines 19-20).

5. Claims 27-36 and 47-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Forrest et al. (5,757,026) in view of Tyan et al. (6,917,159).

As for claims 27 and 47, Forrest et al. show in Fig. 2A and related text a light-emitting element 29 comprising:

an anode 35/40 and a cathode 26/43 (Col. 5, lines 29 and 32); and

a first layer 20E containing a light-emitting material;
a second layer 21H (layer below 21E) containing a first organic compound, the second layer being on the first layer; and
a third layer 22T (layer above 22E) containing a second organic compound, the third layer being on the second layer,
wherein the first layer, the second layer, and the third layer are interposed between the anode and the cathode, and sequentially formed in such a way that the third layer is formed to be in contact with the cathode.

Forrest et al. do not disclose that the second layer contains a metal having an electron donor property for the first organic compound, and the third layer contains a metal oxide having an electron acceptor property for the second organic compound.

Tyan et al. teach the second layer contains a metal having an electron donor property for the first organic compound, and the third layer contains a metal oxide having an electron acceptor property for the second organic compound (Cols. 8-12).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to include a metal having an electron donor property for the first organic compound, and a metal oxide having an electron acceptor property for the second organic compound, as taught by Tyan et al., in Forrest et al.'s device, in order to improve the luminous properties and the heat resistance of the device simultaneously.

Therefore, the prior art combined device shows a second layer containing a first organic compound and a first material having an electron donor property for the first organic compound, the second layer being on the first layer; and a third layer containing

a second organic compound, the third layer being on the second layer and a second material having an electron acceptor donor property for the second organic compound.

As for claims 28 and 48, the prior art combined device shows the first organic compound is an organic compound having an electron transporting property (Forrest: Col. 4, lines 22-23).

As for claims 29 and 49, the prior art combined device shows the first organic compound is a metal complex having a ligand with a π -conjugated skeleton.

As for claims 31 and 50, the prior art combined device shows the second organic compound is an organic compound having a hole transporting property (Forrest: Col. 10, line 37).

As for claims 32 and 51, the prior art combined device shows the second organic compound is an organic compound having an aromatic amine skeleton.

As for claims 30 and 52, the prior art combined device shows the metal having the electron donor property is an alkali metal, an alkaline earth metal, or a rare earth metal (Tyan: Col. 28, line 28).

As for claims 33 and 53, the prior art combined device shows the metal oxide comprises at least one compound selected from the group consisting of vanadium oxide, chromium oxide, molybdenum oxide, cobalt oxide, and nickel oxide (Tyan: Col. 28, lines 16-17).

As for claims 34 and 54, the prior art combined device shows the cathode being in contact with the third layer is made from a conductive material formed by sputtering (Forrest: Col. 5, line 58; Col. 6, lines 19-20).

Regarding the process limitations ("forming by sputtering"), these would not carry patentable weight in this claim drawn to a structure, because distinct structure is not necessarily produced.

Note that a "product by process" claim is directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wertheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); and *In re Marosi et al.*, 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that the applicant has the burden of proof in such cases, as the above case law makes clear.

As for claims 35 and 55, the prior art combined device shows the conductive material is transparent to visible light (Forrest: Col. 5, line 58; Col. 6, lines 19-20).

As for claims 36 and 56, disclosed substantially the entire claimed invention, as applied to claims 27 and 47, respectively, above, except a part of the first layer comprises molybdenum oxide.

Tyan et al. teach a part of the first layer comprises molybdenum oxide (Col. 8, lines 7-20).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to comprise a part of the first with molybdenum oxide, as taught by Tyan et al., in Forrest et al.'s device, in order to improve the electroluminescent characteristics of the device.

Response to Arguments

6. Applicant's arguments with respect to claims 27-36 and 47-56 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MEIYA LI whose telephone number is (571)270-1572. The examiner can normally be reached on Monday-Friday 7:30AM-5:00PM Eastern Standard Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne Gurley can be reached on (571) 272-1670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Lynne A. Gurley/
Supervisory Patent Examiner, Art
Unit 2811

/M. L./
Examiner, Art Unit 2811
1/20/2010